

J. C. R. Licklider 1915-1990

J. C. R. ("Lick") Licklider died 26 June of complications from an asthma attack. Lick was a pioneer in the fields of physiological and psychological acoustics, man-machine systems and computer technology. He was one of the first recipients (1950) of the Acoustical Society's Biennial Award and was President of the Society in 1958. In addition to affiliations with a number of professional and honorary societies, he was a Member of the National Academy of Sciences and Fellow of the American Academy of Arts and Sciences. He received in 1990 a \$20,000 Common Wealth Award in Science and Invention for his work on human-computer interaction and computer networking.

Lick was born in St. Louis, Mo., and graduated in 1937 from Washington University with completed majors in mathematics, physics, and psychology - an early indication of the breadth of his academic interests. He received his Ph.D. in psychology from the University of Rochester in 1942. "Psychology" at the University of Rochester corresponded to what is now called "neurosciences", and his thesis was an electro-physiological study of auditory frequency localization in the cortex of the monkey.

In 1942, the Psycho-Acoustic Laboratory, under the directorship of S.S. Stevens, and the Electro-Acoustic Laboratory, under the directorship of L.L. Beranek, were established at Harvard University to conduct research for the military services on problems related to sound and communications. As a Research Fellow at the Psycho-Acoustic Lab, from 1942-46, Lick participated in a burgeoning of acoustic and psycho-acoustic research. Following his war-related research activities, he was: Lecturer at Harvard 1946-50; Associate Professor at MIT, 1950-57; Vice-President at Bolt, Beranek and Newman, Inc 1957-62; Director of Information and Behavioral Sciences, ARPA, Dept. of Defense, 1962-64; Consultant to the Director of Research, IBM, 1964-67; Professor of Electrical Engineering and Computer Science, MIT 1967-1985; Emeritus, MIT 1985-.

To a significant extent, our understanding of the relations between the physical characteristics of acoustical signals and auditory perception, masking, and speech intelligibility rests on some of Licklider's scientific research findings and conceptualizations. But Licklider's legacy includes important seminal studies and projects in other areas of scientific research.

Perhaps the scope of Licklider's work can be most simply shown by giving some titles, with dates, of his published papers and book-chapters that represent outstanding contributions to the various disciplines involved.

Psycho-acoustics - 'The effects of amplitude distortion on speech', 1944; 'The influence of interaural phase relations upon the masking of speech by white noise,' 1948; 'A duplex theory of pitch perception', 1951; 'Basic Correlates of

the Auditory Stimulus', 1951; 'The Perception of Speech', 1951; 'Masking of speech by line-spectrum interference', 1957; 'Theoretical Discussion of Transmission and Conduction in the Cochlea', 1958; 'An electronic device to measure the intelligibility of speech', 1959; 'Three Auditory Theories', 1959; 'Phenomena of Localization', 1967.

Man-Machine Modeling and Signal Detection - 'Audio Warning Signals for Air Force Weapon Systems', 1961; 'Quasi-linear operator models in the study of manual tracking', 1960; 'On Psychophysiological Models', 1961; 'Studies in the Organization of Man-Machine Systems', 1962; 'Interactions between Artificial Intelligence, Military intelligence, and Command and Control', 1962; 'Man - Machine Information Systems', 1963; 'Information in Decision Making', 1964; 'Theory of Signal Detection', 1964.

Computer Science and Use Development - 'Man-Computer Symbiosis', 1960; 'Preliminary Experiments in Computer-Aided Teaching', 1962; 'Problems in Man-Computer Communication', 1964; 'Schema of Organization of Computers Now in Widespread Use', 1964; 'Libraries of the Future', 1965; 'Console for Man-Computer Interaction', 1966; 'Graphic Input --A Survey of Techniques', 1967; 'Acceptance of Interactive Computing as a New Technological Resource', 1969; 'Potential of Networking for Science and Education', 1974; 'Computers and the Government. A Twenty Year View', 1979; 'The View from the Half-Way Point on a Journey to the Future', 1984; 'Information Technology, Education and the American Future', 1987.

Lick had enthusiasm for both basic and applied science. He participated in, and managed, some major applied research and development projects (examples: computer processing-technique developments, Project 'MAC' at MIT; air defense, Project Charles; undersea warfare, Project Hartwell; the first nation-wide computer network, ARPANET; library automation, Project INTREX). He was instrumental, in the 1970's, in planning, promoting and supervising, a government sponsored multi-year, multi-university and research institute program of research on speech understanding by computer techniques. Lickider was in demand as a speaker at national and international scientific meetings and symposia, and was called upon by the federal government and technical societies to participate in workshops and committees. However, until his recent illness, Lick always spent as much time as possible doing 'hands-on' research in his computer laboratory.

Lick's generosity with his time and ideas for research earned him many devoted students, colleagues and friends. His intellectual abilities and integrity were deeply admired by all who knew him. Lick was a warm and gracious person, and a devoted husband and father. He is survived by Louise, his wife of 45 years, a son Tracy R., a daughter Linda L. Smith, and two grandchildren.

Karl D. Kryter